NEW CERCOPITHECOID FOSSILS, INCLUDING A NEW SPECIES, FROM TAUNG, CAPE PROVINCE, SOUTH AFRICA

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(With 2 figures in the text and plates I–X)

Introduction

In the collection of the Department of Anatomy, University of Cape Town, Professor L. H. Wells recently found a number of blocks of breccia and partially developed fossils from Taung, Cape Province, South Africa. These had been collected by Professor M. R. Drennan in 1925, a few months after the discovery of the type skull of *Australopithecus africanus*, and are almost certainly derived from the same cave deposit as the *Australopithecus* skull. Professor Wells arranged for some of this material to be further developed by Mr. J. W. Kitching of the Bernard Price Institute for Palaeontological Research, Johannesburg. The only identifiable non-primate fossil recovered from this material by Professor Wells is a juvenile lower jaw of a large antelope most nearly resembling the kudu (*Strepsiceros strepsiceros*). Five cercopithecoid specimens from this collection which have been transferred to the South African Museum, Cape Town, have been handed on to me for description. These constitute a significant addition to the cercopithecoid material available from Taung.

The new cercopithecoid specimens comprise a fairly complete skull, with some upper teeth, of a female (S.A.M.11728); most of the right half of a juvenile skull, with two molars (S.A.M.11729); the damaged lower part of a calvaria and the left posterior part of a palate and maxilla, with one molar, of an individual of unknown sex (S.A.M.11730); a bilaterally crushed but almost complete immature female mandible with teeth (S.A.M.11731); three upper incisors in a small anterior fragment of premaxilla (S.A.M.11732).

Two of these specimens (S.A.M.11728 and S.A.M.11730) appear to represent a hitherto unrecorded species. A reconsideration of the material from Taung previously studied (Freedman, 1957) has led to the conclusion that two other specimens (T.10 and T.13, Transvaal Museum, Pretoria), may now be assigned to this species.

Specimens S.A.M. 11728 and S.A.M. 11730

Papio wellsi sp. nov.

Parapapio antiquus (*non* Haughton) Freedman, 1957 (*partim:* T.10). p. 174.
Papio izodi (*non* Gear) Freedman, 1957 (*partim:* T.13). p. 180, pl. 27, fig 56.

Holotype. A fairly complete female skull (S.A.M.11728), with only the right P^3, P^4, M^2 and M^3 present.

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Repository of type. South African Museum, Cape Town, South Africa.

Type site. Limestone Deposits, Taung, Cape Province, South Africa.

Referred Material. The following specimens from Taung are referred to *P. wellsi*:

Specimen T.13: The left half of a skull with M^1–M^3, and also the right M^3 in a small piece of maxilla, probably of a female.

Specimen T.10: A damaged calvaria and posterior part of the muzzle, with the left P^4–M^2 and right M^2, of a juvenile—probably male.

Specimen S.A.M.11730: The badly damaged base of a calvaria and left maxilla with a molar (probably M^2) of unknown sex but most likely a male.

Diagnosis. P. wellsi is a small species of *Papio* which in norma lateralis shows a deep concavity between glabella and rhinion. The muzzle is characterized by fairly well-developed maxillary ridges and large maxillary fossae of variable depth. The calvaria is considerably flattened and there appears to be appreciable sexual dimorphism in skull size. The teeth are of the *Papio-Parapapio* type; all female teeth are smaller than their male equivalents. M^3 shows some reduction of the disto-buccal cusp (metacone).

Description. For purposes of description, skulls have been oriented so that the occlusal plane is horizontal.

The type specimen of *P. wellsi* consists of a fairly complete female skull of a small baboon-like species. The skull lacks the anterior tip of the muzzle, the left orbit and both zygomatic arches. Also, the muzzle is bent at an angle to the calvaria. Much bone has been lost from the calvaria—particularly the posterior, left parietal and basal portions—but a good endocranial cast has been exposed in most of these areas. From the almost unworn state of M^3, it would appear as if this tooth had only just come into functional position and the individual had thus only just become fully adult. The other good female specimen, T.13, consists of most of the left half of the skull but lacks the anterior tip of the muzzle, most of the nasal bones and the top of the calvaria.

Viewed in profile (Plate I) the muzzle of S.A.M.11728 is seen to be elongated and of about the same length as the calvaria. The region between glabella and rhinion forms a deep concavity and the reduction in height is particularly rapid in the inter-orbital region. The portion of the nasal profile just posterior to the nasal aperture is almost horizontal and slopes inferiorly only very slightly. Specimen T.13 (Plate II) has lost most of both nasal bones, but it seems clear that the profile shape was very similar to that of the type specimen.

The muzzle dorsum of the type specimen is short antero-posteriorly and slopes down steeply from either side of the rounded nasal bones to the maxillary ridges. From these ridges, which are not particularly well developed in this specimen, the maxillae slope down almost vertically to the alveolar margin, forming large but only slightly excavated bilateral maxillary fossae. In T.13

the shape of the muzzle dorsum is similar to that of the type but, on the sides of the muzzle, there are very large, deeply excavated maxillary fossae.

Both S.A.M.11728 and T.13 present fairly large orbits. The supra-orbital tori are only slightly developed in the type specimen but well developed in T.13. In S.A.M.11728, the palate is relatively long and narrow, with fairly deep sides and a flat roof (Plate III); the posterior palatine foramina are large. The palate in T.13 is damaged but its shape appears similar to that of the type (Plate IV).

The calvaria of the type specimen is considerably flattened (Plate I). The supra-orbital tori are slightly raised anteriorly and there is a slight ophryonic groove running across the calvaria posterior to them. The post-glenoid process of this specimen is broad mesio-laterally. Anterior to it there is a prominent groove which is deep laterally but becomes shallower medially (Plate III). Anteriorly this groove is bounded by the posterior edge of the inferiorly projecting root of the zygomatic process of the temporal bone. The post-glenoid process, the root of the zygomatic process of the temporal bone and the glenoid fossa are all situated relatively high above the level of the occlusal plane (Plate I). In T.13, the calvaria also appears to have been flattened (Plate II) but the glenoid fossa region is not present for comparison with that of S.A.M.11728.

The nasal bones of the probable male, T.10, are considerably damaged but its profile contour (Plate V) must have been of the *Papio* type (see 'Discussion' below) and similar to that of the type specimen. In spite of considerable damage to this general region, the muzzle dorsum would appear to have been flattened and have had almost vertical lateral surfaces. On the left side, the vertical surface of the maxilla appears to have been pushed in, but from the small posterior part of the right side preserved, it seems clear that an excavated maxillary fossa was present. The calvaria is flattened supero-inferiorly and of very similar shape to that of the type specimen. Although immature, T.10 is considerably larger than the females S.A.M.11728 and T.13. The other probable immature male, S.A.M.11730, has only a small portion of the palate and left maxilla present (Plate VI) but the very deep maxillary excavation and the tooth size (see 'Discussion' below) suggest that it belongs in this species.

In the females S.A.M.11728 and T.13 the dental arcade is horseshoe-shaped but elongated antero-posteriorly (Plates III and IV); the male shape cannot be determined. The male P^4 of T.10 (Plate VII) is very well preserved and almost unworn. It is a typical bicuspid cercopithecoid premolar and has a faint disto-lingual vertical groove. The two female premolars of the type specimen are considerably worn and damaged and little can be seen of their structure. The male and female molars are all typical bilophodont teeth of the *Papio-Parapapio* type and several have grooves marking off mesio-lingual cuspules (Plates III, IV and VII). The disto-buccal cusps of M^3 on both female specimens show signs of reduction. (No male M^3 is known). On size

(table 3) the molars of the female, T.13, are considerably larger than those of the other female, S.A.M.11728. Nevertheless, it is apparent that the female teeth of *P. wellsi* are considerably smaller than those of the males (table 2), the difference being of the order usually found in the genus *Papio*.

The question of possible mandibular fragments and teeth of this species is dealt with in the 'Discussion' below.

Measurements. The measurements of the female skull and the male and female upper teeth of this species are given in tables 1, 2 and 3 respectively.

Discussion. In previous studies two baboon-like species, *Parapapio antiquus* (Haughton) and *Papio izodi* Gear, and possibly a third, *Parapapio jonesi* Broom, have been recorded from Taung, together with a fourth species of considerably different character, *Cercopithecoides williamsi* Mollet. The material assigned to *P. wellsi* must therefore be compared with the material which has been referred to the first three of these species (Freedman, 1957).

The two known male individuals of *P. wellsi* are immature as well as damaged and fragmentary. They appear to agree with the females in general

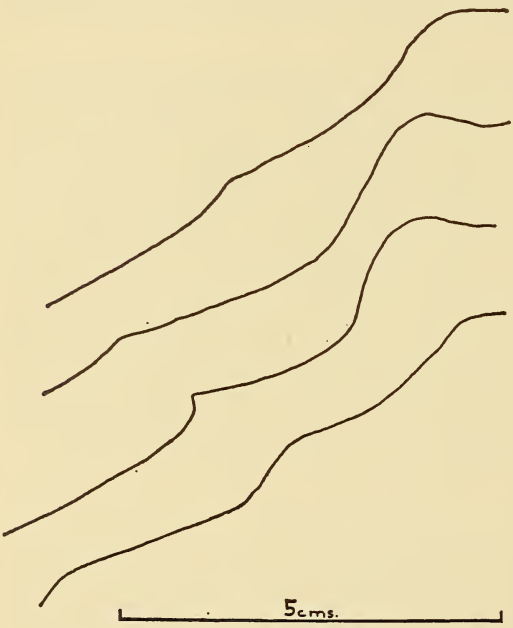

Fig. 1

Figure 1. Pantograph tracings of the muzzle profile shapes of females of (from above downwards): *Parapapio antiquus* (Tvl.639), *Papio izodi* (AD.992), *Papio wellsi* (S.A.M.11728) and *Parapapio jonesi* (STS.565). × 1.

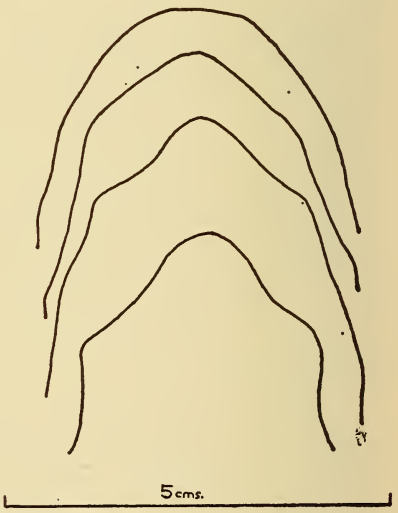

Fig. 2

Figure 2. Pantograph tracings of the muzzle coronal section shapes (taken midway between glabella and rhinion) of females of (from above downwards): *Papio izodi* (AD.992), *Parapapio jonesi* (STS.568), *Parapapio antiquus* (Tvl.639) and *Papio wellsi* (S.A.M.11728). × 1.

morphology but (as described above) they differ in size to the degree usual in *Papio*. Insufficient is thus known of them—and also of the males of some of the species referred to—to make comparisons between the males of value at present. The comparisons made below between *P. wellsi* and other known cercopithecoid species will thus depend mainly on comparisons between females.

Both *Parapapio antiquus* and *Papio izodi* are larger than *P. wellsi* in most skull and some dental measurements (tables 1 and 3), *P. izodi* being the largest. In morphology *P. wellsi* shows important resemblances to both *P. antiquus* and *P. izodi*. Thus, in profile shape of the muzzle *P. wellsi* is clearly of the *Papio* type, with a steep drop in the inter-orbital region similar to that seen in *P. izodi* (fig. 1). On the other hand, the muzzle shape of the new species in coronal section (fig. 2) is very similar to that of *P. antiquus*. *P. wellsi* and *P. antiquus* both have definite maxillary ridges and maxillary fossae, whereas neither is present in *P. izodi*. The new species differs from both *P. izodi* and *P. antiquus* in its generally smaller skull and dental size, its flatter calvaria and the shape and situation of the structures in the glenoid fossa region as described above. On muzzle profile shape and sexual dimorphism the group of specimens referred to *P. wellsi* (S.A.M.11728, T.13, T.10 and S.A.M.11730) must clearly be placed in the genus *Papio*. However, to suggest including them in the species *P. izodi* would be to increase the range of variation, particularly morphological, beyond reasonable limits.

P. wellsi is similar to *Parapapio jonesi* in skull size (table 1) and in muzzle coronal section shape (fig. 2). However, it differs considerably from that species in muzzle profile shape (fig. 1) and also in the shape and relative height of the calvaria. In the teeth (table 3), the morphology of the two species is similar but on size, particularly in the length dimensions, the *P. wellsi* molar measurements are considerably larger.

Before this new species was established, T.13 was referred to *P. izodi* (Freedman, 1957). The presence, in a single specimen, of very large, deep maxillary fossae and a slightly different muzzle dorsum shape, were not felt to be sufficient grounds for the creation of a new species. Despite the size and morphological differences from the type specimen, described above, it now appears that this specimen is a female of the new species, *P. wellsi*. The main difference between T.13 and the type specimen of *P. wellsi* lies in the size and depth of the maxillary fossae. In a large number of skulls of *Papio ursinus* and *Papio cynocephalus* which were examined for this feature, maxillary fossae were found to be of very variable size and depth.

In that same study (Freedman, 1957) it was also suggested that the muzzle shape of T.10, in profile, was probably that of a *Parapapio*. The profile shape appeared to be of the *Papio* type but the inter-orbital region was considerably damaged and the individual from which it came, immature. On the shape of the muzzle in coronal section this specimen agreed with the *Parapapio* described from Taung (*P. antiquus*) and disagreed with *P. izodi*, the only *Papio* then known from Taung. It was thus decided that the shape in an undamaged adult of this

type might well be similar to that of a *Parapapio* and the specimen was referred to *P. antiquus*. The new species now being described is a *Papio* but has a muzzle which, in coronal section, is similar to that of *Parapapio antiquus*. The apparent contradiction of profile and coronal section muzzle shapes is now resolved and T.10 can, with reasonable certainty, be referred to *P. wellsi*. On the size of the skull and teeth the specimen seems clearly to be from a male.

TABLE 1. Comparison of the skull measurements (in mm.) of *Papio wellsi* females with those of similar female cercopithecoid specimens.*

	Papio wellsi		*Para-papio jonesi*	*Parapapio antiquus*		*Papio izodi*		*Papio angusti-ceps*
	S.A.M. 11728	T.13	STS. 565	TVL. 639	T.17	AD.992	AD.946	K.A.194
General								
Greatest length	(134)	(130)	(135)	(143)		(138)		139
Basal length	(91)							99
Calvaria								
Height								
Basion-bregma	54			58		60		(64)
Basion-glabella	64			70		72		
Breadth								
Greatest temporal	(65)		68	69		72		67
Length								
Inion-glabella	(82)		(88)	(90)		(90)		
Inion-basion	(50)			47		53		48
Foramen magnum								
Length	(18)							
Muzzle								
Height								
Anterior to P^3	16		22		20		17	21
Breadth								
Anterior to M^3	43	45	46		46	42	47	45
Anterior to P^3	29.5		35					36
Dorsal to M^2	37		30	35				31
Length								
Muzzle	(67)		(65)				78	78
Palate	(58)		51	63	(62)			
Orbit								
Inter-orbital	(9)		10	8				
Nasal								
Breadth	15.5			17				15.4

* The comparative measurements in this table, and also those in the succeeding tables, are all from Freedman (1957). Professor L. H. Wells has pointed out to me that the figure for the muzzle length of AD.946 was erroneously given in that study as 88 mm. instead of 78 mm.

The new specimen, S.A.M.11730 is only a small maxillary fragment (Plate VI). However, the deeply excavated maxillary fossa is strongly suggestive of *P. wellsi* and, when the single M^2 is compared to its equivalents in tables 2 and 3, it is again seen to fit well as a male in that species.

Because of the resemblances and the small number of specimens of the four baboon-like species from Taung, and particularly with the overlap of characters between *P. wellsi*, and the previously described species *Parapapio*

TABLE 2. Comparison of the dimensions (in mm.) of the upper teeth of *Papio wellsi* males with those of similar male cercopithecoid specimens.

	P^4		M^1			M^2		
	b	l	bm	bd	l	bm	bd	l
Papio wellsi								
S.A.M.11730						11·8	10·4	13·2
T.10	7·5	7·6	10·0	9·2	10·5	11·8	10·6	12·8
Parapapio jonesi								
STS.367					(9·3)			10·8
STS.250	7·7	(5·6)	9·0	8·6	7·3	10·4	9·6	9·5
Parapapio antiquus								
CT.5356					9·2	11·6	11·0	11·8
Papio izodi								
(no males known)								
Papio angusticeps								
Range*	7·9	6·0	8·8	8·4	9·5	10·8	9·7	11·6
	8·5	7·4	10·5	9·3	10·8	12·4	10·5	12·7

* The ranges given in this and the succeeding tables are based on very few (mostly 3–6) specimens.

jonesi, *Parapapio antiquus* and *Papio izodi*, it is difficult to identify positively a number of specimens. For example, C.T.5360 and T.22, previously referred to *P. antiquus* (Freedman, 1957), consist of upper teeth only and could, on size, equally well belong in *P. wellsi*. Similarly, T.16 was previously described as a female *P. antiquus* and could now also be referred to *P. wellsi*.

The possibility of even C.T.5356, previously considered a male of *P. antiquus*, being a badly distorted male of *P. wellsi* cannot now be ruled out completely. The distal reduction of M^3 of this specimen is mainly on the buccal side and very similar to that seen in the female *P. wellsi* specimens. If this specimen were referred to *P. wellsi*, this would resolve the apparently anomalous situation of a female *P. antiquus* having an M^3 very considerably reduced

distally, and, the male of the same species having the distal portion of that tooth only slightly reduced. However, it does not appear as if the specimen had a *Papio*-like muzzle, although this region is badly distorted and damaged, possibly sufficiently so to be misleading.

Further, the diagnostic features of the above mentioned four species lie mainly in the skull and few specimens are known which include diagnosable skull fragments associated with mandibles with teeth. In particular, no good *P. wellsi* skull is associated with lower teeth. Hence, with the description of the new species *P. wellsi*, the mandibles referred to *P. antiquus* (T.12 and T.23—males; T.18, T.21 and T.27—females; A.D.944—? sex) could all now equally well be referred to *P. wellsi*. AD.943, a male specimen formerly referred to *P. antiquus*, on tooth size and probable muzzle shape, the latter as deduced from the case of the internal surface, should probably now be referred to *P. wellsi*. It is therefore now apparent that the status of a number of specimens from Taung, including almost all of the known mandibles, is best left in abeyance until more material, especially associated skulls and mandibles, is discovered.

The presence at Taung of two similar species of *Papio* might at first glance appear improbable, but it should be recalled that the limestone deposit at this site covers a considerable period of time and the two species might not necessarily have been in the area at the same time. The material described in this paper almost certainly comes from the *Australopithecus africanus* type site, whereas at least some of the material previously described from Taung came from other parts of the deposit and may thus possibly be of different age. Further, a fairly large number of different fossil cercopithecoids (fifteen species of five genera), dating from roughly the same time period as that covered by the Taung deposit, have been described from Southern Africa. From one of these sites (Sterkfontein), three species of one genus (*Parapapio jonesi*, *P. broomi* and *P. whitei*) have been recorded.

With regard to the other species of *Papio* described from Southern Africa, *P. wellsi* shows resemblance to *Papio angusticeps* (known from Kromdraai and Cooper's Quarry, near Krugersdorp, Transvaal, South Africa) in the depth and extent of the maxillary fossae. However, it is a smaller species, has less well-developed maxillary ridges and a flatter calvaria. The teeth of the two species are similar in size and morphology. The new species is very considerably smaller than *Papio robinsoni* (known mainly from Swartkrans, Transvaal, South Africa) and *Papio ursinus* (the extant South African baboon), and also differs from these two species in a number of morphological characters.

Of all the cercopithecoid species known from Southern Africa, *P. wellsi* appears to have its closest affinities with *P. angusticeps*. These two *Papio* species are of generally similar morphology and are both characterized by large and usually deep maxillary fossae. *P. angusticeps* is somewhat larger than *P. wellsi* but it occurs at sites considered to be of more recent date than Taung. However, *P. wellsi* shows differences even to *P. angusticeps*, e.g. in its flattened calvaria, which would appear to rule it out as a direct antecedent of that species.

TABLE 3. Comparison of the dimensions (in mm.) of the upper teeth of *Papio wellsi* females with those of similar female (and ? sex *Parapapio jonesi*) cercopithecoid specimens.

		P^3		M^1			M^2			M^3			P^4–M^3
		b	l(h)	bm	bd	l	bm	bd	l	bm	bd	l	
Papio wellsi	S.A.M.11728	6·7	—	—	—	—	(10·0)	9·0	(11·2)	(9·7)	(8·4)	10·8	36·1
	T.13			9·5	9·1	9·7	11·2	10·2	11·8	11·4	9·4	11·2	(37·5)
Parapapio jonesi	T.14*			8·3	7·9	8·4	9·7	9·4	9·8				
	Range:	6·7	3·5	8·6	7·4	8·2	10·2	8·5	(9·6)	9·3	7·4	9·0	32·3
		7·6	6·8	9·0	(8·9)	9·3	10·7	9·2	(10·6)	10·1	8·1	10·0	34·2
Parapapio antiquus	Range:			10·0	8·8	10·3	10·7	9·0	11·6	10·4	7·2	10·4	37·0
				10·8	(10·0)	10·8	11·5	9·5	11·9	11·4	(9·5)	11·3	(38·8)
Papio izodi	AD.946					(10·5)			(12·0)				(41·0)
	AD.992								(12·0)				
Papio angusticeps	Range:	7·0	3·8	8·7	7·5	9·0	10·4	9·4	11·0	10·3	8·0	10·6	35·7
		7·4	10·0	9·9	8·7	10·3	11·6	11·0	12·6	12·0	9·0	12·0	38·5

* This is the only specimen of this species known from Taung; its sex is unknown.

Specimen S.A.M.11729

Description. This specimen (Plate VIII) consists of the right half of the skull of a juvenile baboon of unknown sex. Most of the nasal and frontal bones are missing and there are a number of fractures and slightly weathered areas on the calvaria and muzzle. The base of the calvaria is considerably damaged but the palate is well preserved. Of the dentition, only the right M^1 and the buccal half of the right dm^2 are present.

The muzzle dorsum, on each side, is triangular in shape and slightly concave. It slopes down rather steeply from the lateral edge of the rounded nasal to the clearly marked maxillary ridge. From the maxillary ridge, the maxilla slopes down even more steeply to the alveolar margin and a large, slightly excavated, maxillary fossa is formed.

Features of note when this specimen is compared with *Papio* (*P. ursinus* and *P. cynocephalus*) and *Parapapio* (M.3004, *Parapapio* sp.) specimens of approximately the same dental age are:

(1) The size of the orbit is relatively large.

(2) The zygomatic arch is considerably better developed.

(3) The anterior part of the temporal line is rather well defined. (The posterior part of this line is weathered away.)

(4) The mastoid region is well developed.

(5) The supramastoid crest leads to an occipital crest.

(6) The planum occipitale is more vertical than usual.

These differences may, in some of the above instances, be more apparent than real as it is very difficult to get comparative specimens of precisely the same age. Considerable time periods elapse between the eruption of successive teeth in the cercopithecoids. However, morphologically the skull of this specimen does give the impression of being robust and adult for its age.

The palate of S.A.M.11729 is fairly deep and smoothly concave from the alveolar margin to the midline, which is raised into a crest anteriorly. The posterior palatine foramen is situated in a deep recess. The fragment of dm^2 appears similar to its equivalents in *Papio* and *Parapapio*; the single M^1 is well preserved, almost unworn and of the *Papio-Parapapio* type.

Measurements. As the specimen is juvenile, no skull measurements were taken. The dimensions of the single M^1 (in mm.) are: breadth (mesial)—8.5, breadth (distal)—8.0 and length—9.5.

Discussion. On the shape in coronal section of the muzzle, S.A.M.11729 is similar to *Papio wellsi*, *Parapapio antiquus* and *Parapapio jonesi*. Reconstructions of the frontal and nasal regions in plasticine to give the probable profile shape did not give wholly satisfactory results, as the damage is so extensive that there is a measure of variation in the shape which can be produced, depending on how far forwards the supra-orbital tori and glabella are produced. However,

the angle at which the remaining small portion of the nasal bones lies, and the shape of the small piece of frontal lying at the supero-lateral corner of the orbit, do seem to favour at least a shallow concave type of nasal profile.

The various notable features of S.A.M.11729, to which attention was drawn above, cannot be compared fairly with the equivalents in the three species under consideration. Firstly, usually only female skulls of those species are available and secondly, the known specimens are often damaged in the relevant areas. Further comparative material is necessary for the evaluation of those features in S.A.M.11729. However, the general robustness of the specimen may well be due to the specimen being a juvenile male and may not have any taxonomic significance.

The dimensions of the single M^1 of S.A.M.11729 are similar to those in the males and females of *P. jonesi* (tables 2 and 3). When compared to their equivalents in *P. wellsi* and *P. antiquus*, the dimensions of this tooth are almost all smaller than those of the females of both of those species (table 3), but, of the two, they are appreciably closer to *P. wellsi*. Compared with the male equivalents in those two species (table 2), the tooth is considerably smaller than those of *P. wellsi* (in which there is size sexual dimorphism of the molars) but there is no known male M^1 of *P. antiquus* for comparison. However, as there is little or no sexual dimorphism in the molars of any of the known *Parapapio* species, the size difference should be about the same as for the female of that species.

It is most difficult to come to any definite conclusion about the affinities of S.A.M.11729. From the muzzle coronal shape, the specimen could belong in *P. wellsi*, *P. antiquus* or *P. jonesi*. The reconstruction of the muzzle profile shape is slightly more suggestive of a *Papio* but *P. jonesi* does show some concavity in this region and the juvenile shape of *Parapapio* spp. generally is not well known. The size of the single M^1 is most similar to the equivalent tooth in *P. jonesi* but, it is also not very much smaller than the equivalent tooth in the *P. wellsi* female (T.13) and it should be remembered that only a few specimens are involved in this comparison. On balance of evidence, it would appear that S.A.M.11729 might be a juvenile female of *P. wellsi* or, more likely, a juvenile male or possibly female of *P. jonesi*. However, the provenance of *P. jonesi* at Taung depends on a single specimen, consisting of a small piece of maxilla and damaged teeth, and the possibility of the specimen belonging even in *P. antiquus* cannot be ruled out completely.

Specimen S.A.M.11731

Description. S.A.M.11731 is an almost complete mandible of an immature female cercopithecoid. The specimen has been fractured slightly to the right of the symphysis, and the right half has been pushed to the left and lies close up against, and slightly above, the left half of the mandible (Plate IX).

I_1–M_2 are present on the left side. The premolars and molars are very

TABLE 4. Comparison of the dimensions (in mm.) of the lower teeth of the female mandible, S.A.M.11731, with their equivalents in females of similar species known from Taung.

	I_1			I_2			$\overline{C}$	P_3		P_4		M_1			M_2		
	h	b	l	h	b	l		b	l(h)	b	l	bm	bd	l	bm	bd	l
S.A.M.11731	(11·0)	—	5·6	(10·7)	—	5·7		4·9	11·8	6·5	7·5	(7·0)	—	9·5	8·7	8·2	11·2
Parapapio jonesi Range:	2·0 7·1	6·2 6·3	4·3 4·9	2·5 6·0	6·2 6·2	3·2 4·3		4·4 5·4	7·0 10·0	5·7 7·5	6·0 7·1	6·7 7·6	6·7 7·9	(7·0) 9·0	7·6 9·9	7·2 9·4	9·5 11·0
Parapapio antiquus (?) T.18								5·7	12·7	—	—	8·3	8·3	10·0	9·6	9·4	12·1
Parapapio antiquus (?) T.21	9·5	6·7	5·1	9·9	6·4	5·9		5·1	10·2	7·1	7·5						
Parapapio antiquus (?) T.27	10·2	6·8	5·8	8·9	6·6	5·9		4·9	11·3	—	8·4	—	—	—	(9·2)	9·5	11·7
Papio izodi AD.946															—	10·1	12·2

well preserved but the incisors and canines are cracked and damaged. On the right, the incisors are also present but very badly damaged. The only other tooth present on this side is M_2 and it is slightly damaged distally. M_3 has not yet erupted on either side but the tooth can be seen, on both sides, lying in its crypt. The tips of the cusps of that tooth are at about the level of the buccal alveolar margin.

Anteriorly, the symphysis slopes down steeply and is flattened. A foramen symphyseosum is present in the midline. The flattened anterior surface of the symphysis is demarcated by a prominent oblique ridge on either side. The body of the mandible is low and thin but shows some thickening posteriorly in the region of M_3. A large but very shallow mandibular fossa is present, on the antero-inferior margin of which is the mental foramen. The ramus is about as vertical as that of *Papio ursinus* but does not rise as high. The gonial angle is inverted. The coronoid process lies slightly above the level of the condyle; the sigmoid notch was probably not very deep. The teeth are all typical of the female *Papio* and *Parapapio* and show no unusual features (Plates IX and X). A small mesio-buccal cuspule is present on both M_2 teeth.

Measurements. As the specimen is immature, no measurements of the mandible itself were taken. The dental dimensions and comparisons are given in table 4.

Discussion. On molar size, which has often proved a most useful taxonomic character in the Cercopithecoidea, S.A.M.11731 is smaller than the few known female specimens previously referred to *P. izodi* and *P. antiquus*, the difference being greater in the former case. In the incisors and premolars, the dimensions of S.A.M.11731 and *P. antiquus* females are similar but there are no comparable teeth of *P. izodi*. As compared to the female *P. jonesi* teeth, the incisors of S.A.M.11731 are larger but the premolars and molars are of about the same size. No lower teeth or mandibles have so far been assigned to *P. wellsi*. It is not possible to assess accurately what the adult dimensions of the mandible of S.A.M.11731 would have been but, as far as can be judged, the size would probably have been about the same as in *P. jonesi* females, slightly smaller than in *P. antiquus* females (assuming T.18 and T.27 to have been correctly assigned) and considerably smaller than in *P. izodi* females.

As concluded above, the Taung mandibles are best left in abeyance until more and better associated skulls and mandibles are recovered. However, it would appear probable that, on size and the presence of a mandibular fossa, the new immature, female, mandibular specimen, S.A.M.11731, might well belong in *P. wellsi*, but it could also reasonably be referred to *P. jonesi*.

Specimen S.A.M.11732

This specimen consists of a small portion of the left premaxilla with I^1 and I^2 and an associated right I^2, almost certainly of the same individual.

The teeth are of the typical cercopithecoid pattern and show no unusual features. Insufficient upper incisors are known from Taung for the affinities of the specimen to be determined.

Summary

1. Five new cercopithecoid fossils are described from Taung. They almost certainly come from the *Australopithecus africanus* type site.

2. Two of these specimens, plus two specimens previously described from Taung, form the basis of a new species, *Papio wellsi.*

3. Because of an overlap in size and morphological characters between the four baboon-like species recorded from Taung, the identity of several specimens, notably mandibles, cannot at present be determined.

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References

Freedman, L. 1957. *Ann. Transv. Mus.*, **23**, 121—262.